REMARKS

I. Status Summary

Claims 1-44 are pending in the present application. Claims 1, 7, 8, 14, 18, 19, 24-26, 29, 30, 32-34, 37, 40, and 44 have been amended. Therefore, upon entry of this amendment, claims 1-44 will be pending. No new matter has been introduced by the present Amendment. Support for the amendments can be found, for example, on page 19, lines 1-4, page 6, lines 1-15, and page 19, lines 8-14 of the present specification. Reconsideration of the application as amended and based on the arguments set forth hereinbelow is respectfully requested.

II. Summary of Telephone Examiner Interview

Applicants acknowledge with appreciation the telephone interview granted by the examiner to Applicants' representative, Wesley A. Sheffield, on April 29, 2008. In the Telephone Examiner Interview, the presently pending claims, Larsen, Phadke, and Kajizaki were discussed. Agreement was not reached regarding the claims.

Regarding the rejection of claims 1-7, 13, 19-26, 34-36, and 44 under 35 U.S.C. §102, applicants proposed amending the claims to recite that resuming network protocol operation from the state in which the first switch last operated correctly is performed by injecting the received packet forwarding and protocol state information into one or more subsystem of the second switch management module associated with performing packet forwarding and participating in network protocols. The examiner agreed to consider any proposed amendments directed to clarifying that, at failover, packet

forwarding and protocol state information is injected into one or more subsystems in the second switch management module.

Regarding the rejection of claims 8-12, 27-29, and 37-39 under 35 U.S.C. §103, applicants argued that communicating the packet forwarding and protocol state information to the second switch management module using a canonical message format was fully described in the present specification and as such, was patentable over Phadke. Applicants argued that the canonical message format is a single unified format for including various types of data in standard locations within the message. Moreover, because the second switch management module was aware of this canonical message format, the processing burden on the second switch management module was significantly reduced over conventional methods. In contrast, applicants argued that Phadke teaches receiving messages in a variety of protocol formats, thus necessitating a table lookup in order to determine how to properly decode each message type. Applicants suggested that the method taught by Phadke was significantly more processing resource intensive than the method using the canonical message format recited in the claims. The examiner agreed to consider any proposed amendments directed to clarifying that the canonical message format is a single unified message format.

Regarding the rejection of claims 14-18, 30-31, and 40-43 under 35 U.S.C. §103, applicants argued that the meaning of bracketing related messages together was fully described in the present specification and as such, was patentable over Kajizaki. Applicants argued that using bracketing to group related messages together includes

grouping all messages received between an open bracket and a closed bracket as part of a single transaction. Applicants further argued that, in contrast to bracketing related messages together, Kajizaki teaches combining multiple smaller messages into a new larger combined message based only on their size in order to transmit packets having sizes approximately equal to the maximum transmission unit (MTU). The examiner agreed to consider any proposed amendments directed to clarifying that bracketing related messages together included grouping, without encapsulating, functionally related messages together.

At the conclusion of the Telephone Interview, the examiner noted that a supplemental office action clarifying the rejection of claim 44 would be filed and that the time for response would be extended by 1-month in order to allow applicants sufficient time to respond to the supplemental office action. Applicants agreed to the time period and to file a response after receiving the supplemental office action.

The amendments proposed above are consistent with the discussion in the Telephone Interview. The examiner agreed to consider any amended claim language. The examiner is invited to call applicants' attorneys, Gregory A. Hunt or Wesley A. Sheffield, at (919) 493-8000 to conduct a subsequent telephone interview to resolve any outstanding issues.

III. Claim Rejections Under 35 U.S.C. § 102(b) and 102(e)

Claims 1-7, 13, 19-26, 32-36, and 44 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent Publication No. 2004/0047286 to Larsen et al. (hereinafter, "Larsen"). This rejection is respectfully traversed.

Independent claim 1 recites operating a first switch management module of a switch in a master mode that includes performing packet forwarding and participating in network protocols and maintaining packet forwarding information and protocol state information. The packet forwarding and protocol state information is communicated to a second switch management module operating in a slave mode. Operating the second switch module in the slave mode includes continuously monitoring the operational state of the first switch management module, and receiving the packet forwarding and protocol state information from the switch management module. In response to detecting failure of the first switch management module, the second switch management module switches to master mode and resumes network protocol operation from a state in which the first switch management module last operated successfully based on the received packet forwarding and protocol state information.

Independent claim 1 has been amended to recite that resuming network protocol operation from the state in which the first switch management module last operated correctly by injecting the received packet forwarding and protocol state information into one or more subsystems of the second switch management module associated with performing packet forwarding and participating in network protocols. Independent claims 7, 19, 24-26, and 32-34 recite similar elements. Thus, claims 1, 7, 19, 24-26,

and 32-34 recite, at failover, injecting the received packet forwarding and protocol state information into one or more subsystems of the second switch management module associated with performing packet forwarding and participating in network protocols.

There is no teaching or suggestion in Larsen of injecting the received packet forwarding and protocol state information into one or more subsystems of the second switch management module associated with performing packet forwarding and participating in network protocols. Rather, Larsen teaches synchronizing state information databases between the active and standby control blades while queuing the inputs to the active control blade. For example, Larsen states:

> The synchronization process requires that the state on the active control blade be transferred to the standby control blade. The state is typically kept in a database, in an appropriate database format. The synchronization process transfers the contents of the database from the active control entity to the standby control entity. For example…contents of database **52** are transferred to database **66**. (See paragraph 35 of Larsen).
>
> When synchronizing, one important factor is the ability to queue the inputs to the active control blade, transfer the state, and then process the inputs that were previously queued. (See paragraph 36 of Larsen).

According to the above quoted passages in Larsen, state information databases are synchronized between the active and standby control blades while the inputs to the active control blade are queued. In contrast, claim 1 recites injecting the received packet forwarding and protocol state information into one or more subsystems of the second switch management module associated with performing packet forwarding and participating in network protocols. Synchronizing state information databases is different from injecting packet forwarding and protocol state information into one or more subsystems of the second switch management module associated with

performing packet forwarding and participating in network protocols because even after the standby control blade synchronizes its state information database with the active control blade, one or more subsystems must obtain the necessary information from the database in order to continue normal operation after failover. In Larsen, these subsystems may include, for example, protocol state machine **72** on control blades **20** and **22** and transmit queue **92** on line blades **28-32**. As a result, the method taught by Larsen produces slower and non-hitless switch management module failover. In contrast, the method recited in claim 1 produces a near instantaneous injection of protocol and state information into the one or more subsystems associated with performing packet forwarding and participating in network protocols.

Accordingly, because Larsen fails to teach or suggest injecting the received packet forwarding and protocol state information into one or more subsystems of the second switch management module associated with performing packet forwarding and participating in network protocols, it is respectfully submitted that the rejection of independent claims 1-7, 13, 19-26, 34-36, and 44 as anticipated by Larsen should be withdrawn.

III. Claim Rejections Under 35 U.S.C. § 103

A. Rejection of claims 8-12, 27-29, and 37-39 over Larsen in view of Phadke

Claims 8-12, 27-29, and 37-39 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Larson in view of U.S. Patent Publication No. 2004/0034703 to Phadke (hereinafter, "Phadke"). This rejection is respectfully traversed.

Independent claim 8 recites a method for hitless switch management module failover. The method includes, operating a first switch management module in a switch in a master mode. In the master mode, the first module performs packet forwarding and participates in network protocols. Packet forwarding and protocol state information is maintained based on step (i) and the packet forwarding and protocol state information is communicated to a second switch management module operating in a slave mode using a canonical message format. The second switch management module in the switch is operated in the slave mode. In the slave mode, the operational state of the first switch management module is continuously monitored. The packet forwarding and protocol state information is received from the first switch management module. In response to detecting failure of the first switch management module, the second switch management module switches to the master mode and resumes network protocol operation from a state in which the first switch management module last operated correctly based on the received packet forwarding and protocol state information.

Independent claim 8 has been amended to recite that the canonical message format is a message format that corresponds to message type and length rules stored by the master and slave switch management modules. Independent claim 37 has been similarly amended. Thus, claims 8 and 37 respectively recite a method and a system for hitless switch management module failover using a canonical message format that corresponds to message type and length rules stored by the master and slave switch management modules.

As mentioned above, Larsen fails to teach or suggest using a canonical message format that corresponds to message type and length rules stored by the master and slave switch management modules.

Phadke likewise fails to disclose, teach, or suggest communicating information to the second management module using a canonical message format that corresponds to message type and length rules stored by the master and slave switch management modules, as claimed. Phadke is directed to a system and method for decoding communication between nodes of a cluster server. Specifically, Phadke teaches a table-based packet sniffing/decoding system wherein packets of various protocols are communicated between nodes of a cluster server. Fields of the packets are decoded using protocol definition tables. For example, upon receiving a packet, a protocol is identified for the packet and used to look up the packet format structure in the protocol definition tables. The field definition table may define field parameters for use in decoding each field. Each field may then be individually decoded. (See col. 1, paragraph 6 of Phadke).

Thus, according to Phadke, messages may be encoded in a variety of message formats. In contrast, claim 8 recites encoding all messages in a single canonical message format. As described in the present specification, a disadvantage of prior failover implementations where data structures were simply communicated as-is between master and slave switch management modules, updates would fail since the fields in master switch management module data structures do not correspond to the fields and the slave switch management module data structures. However, because the

present invention uses a canonical message format, the slave switch management module may decode the corresponding parameters from the message, update the matching fields in its data structures, and leave the fields that are not updated unchanged. (See page 12, line 18 – page 13, line 1 of the present specification). Thus, claim 8 recites using a canonical message format in order to overcome the stated deficiencies in the prior art.

Additionally, Phadke teaches that a table lookup is performed for each packet in order to be properly decoded. This additional step is not necessary according to the method recited in claim 8 because only a single canonical message format is used. Again, it is desirable to minimize the amount of processing resources used to decode a packet.

Thus, even when combined, Larsen and Phadke fail to teach or suggest all of the elements recited in claims 8 and 37. Accordingly, it is respectfully submitted that the rejection of claims 8-12, 27-29, and 37-39 as unpatentable over Larsen in view of Phadke should be withdrawn.

B. Rejection of claims 14-18, 30-31 and 40-43 over Larsen in view of Kajizaki

Claims 14-18, 30-31 and 40-43 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Larson in view of U.S. Patent No. 7,247,711 to Kajizaki et al. (hereinafter, " Kajizaki "). This rejection is respectfully traversed.

Independent claim 14 recites a method for hitless switch management module failover. The method includes operating a first switch management module in a switch

in a master mode. In the master mode, packet forwarding and participation in network protocols is performed. Packet forwarding and protocol state information is maintained and the packet forwarding and protocol state information is communicated to a second switch management module operating in a slave mode using bracketing to group related messages together. The second switch management module in the switch operates in the slave mode. In the slave mode, the operational state of the first switch management module is continuously monitored. Packet forwarding and protocol state information from the first switch management module is received. In response to detecting failure of the first switch management module, the second switch management module switches to the master mode and resumes network protocol operation from a state in which the first switch management module last operated correctly based on the received packet forwarding and protocol state information.

Independent claim 14 has been amended to recite that using bracketing to group related messages together includes grouping all messages received between an open bracket and a closed bracket as part of a single transaction. Independent claims 30 and 40 have been similarly amended. Thus, claims 14, 30 and 40 respectively recite methods and a system for performing hitless switch management module failover using bracketing to group related messages together that includes grouping all messages received between an open bracket and a closed bracket as part of a single transaction.

There is no disclosure, teaching, or suggestion in Kajizaki of performing hitless switch management module failover using bracketing to group related messages together that includes grouping all messages received between an open bracket and a

closed bracket as part of a single transaction. In contrast, Kajizaki teaches combining packets into packets having a size equal to the maximum transmission unit size for the route over which the packets are to be transmitted.

The Examiner argues that, for example, column 1, lines 54-61 of Kajizaki teaches using bracketing to group related messages together. Applicants respectfully disagree. Regarding combining packets for transmission across a network based upon an attribute of the packet, Kajizaki states:

> A routing information gathering unit for determining the maximum transmission unit of a transmission path along a route over which packets are to be transmitted. A combining unit for assembling a combined packet by combining packets up to a length that does not exceed the maximum transmission unit of the transmission path. (See col. 1, line 64 – col. 2, line 2 of Kajizaki).

According to the above-quoted passage in Kajizaki, packets are combined to create a combined packet having a length that does not exceed the MTU of the transmission path.

There is no teaching or suggestion in Kajizaki of bracketing messages related to one another based on their function. Instead, Kajizaki teaches **combining** messages based on their **size**.

Additionally, there is no teaching or suggestion in Kajizaki of bracketing messages without combining the bracketed messages into a single message. Instead, Kajizaki teaches forming a new packet comprised of the combined smaller packets. Bracketing of messages is different from combining messages to form a new message because bracketing does not create a new message nor does it alter the original messages, while combing message both creates a new message and destroys the original messages.

Thus, even when combined, Larsen and Kajizaki fail to teach or suggest all of the elements recited in independent claims 14, 30 and 40. Accordingly, it is respectfully submitted that the rejection of claims 14-17, 30-31 and 40-43 as unpatentable over Larsen in view of Kajizaki should be withdrawn.

CONCLUSION

In light of the above Amendments and Remarks, it is respectfully submitted that the present application is now in proper condition for allowance, and an early notice to such effect is earnestly solicited.

If any small matter should remain outstanding after the Patent Examiner has had an opportunity to review the above Amendments and Remarks, the Patent Examiner is respectfully requested to telephone the undersigned patent attorney in order to resolve these matters and avoid the issuance of another Official Action.

DEPOSIT ACCOUNT

Although no fee is believed to be due, the Commissioner is hereby authorized to charge any deficiencies of payment or credit any overpayments associated with the filing of this correspondence to Deposit Account No. **50-0426**.

Respectfully submitted,

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